the many questions pertaining to the exploitation of these lines. The organization of the meteorological service requires modification in accordance with new extensions of the international air lines and to cope with new problems. The latest aeronautical conferences have prepared a general program of radiometeorological liaison which will permit of unlimited development of air activity.

Radio conferences.—Meteorology, particularly aviation meteorology, is very dependent upon radiotelegraphy. However, the radio facilities are not sufficient to handle all of the traffic. This necessitates international agreements for the redistribution of wave lengths. The radiotelegraphic conference held at Washington has entirely modified the international radio chart, which dated from 1912. For the first time, international meteorology was represented, and one of these representatives was a Frenchman. Meteorology has obtained in the new international radiotelegraph regulations a place corresponding to its essential needs. * * *

DEVELOPMENT OF THE WORLD'S NETWORK

The development *in length* of long-distance flights and of the great international lines entails a development *in area* of information received, and since meteorological observations throughout the world must take place at the same time and since the transmission of the information must be as rapid as possible it becomes necessary to concentrate during certain hours information gathered from one-third the surface of the globe. For lack of appropriate means, the bureau had to resort to technical means not yet in general use.

Several meteorological radiograms are received daily from America. These are made possible by the powerful sending sets in use in America and the excellent reception in France. Unfortunately, due to the poor sending facilities placed at our disposal and the difficult condition of reception in America, we have been unable to effect a proper exchange. America is sending us daily more than 600 words and has received nothing from us. This is an abnormal condition which can not last indefinitely.

Adequate radio communication with America is essential. So far no expenditure has been made for this purpose and only existing means have been available. If improvements which are to be made in the military stations on the Eiffel Tower and at Issy-les Moulineaux are not sufficient to solve this problem, money must be appropriated to create the necessary technical means.

Actually, the use of long and of short waves permit the reception in Europe of American information. The situation is not quite so favorable with respect to information at sea. The collaboration of France in "ship's observation" would be very meager were it not for the *Jacques Cartier*. Notwithstanding means utilized since 1921, and the free assistance given by the French Line and the Radio-Maritime Co., it has been impossible to obtain satisfactory transmission by coast stations of meteorograms sent from French ships over the North Atlantic. The bureau first used the naval stations but they could not assure liaison with commercial ships, for various reasons. The bureau then tried to transmit its radiograms by the postal stations along the coasts, paying the entailed expenses, but without satisfactory results. This situation must be remedied if France is to play its part in the vast program established by the International Commission for the Meteorological Organization at Sea. * * *

(*Prepared under the direction of Brig. Gen. William W. Harts, military attaché at Paris.*)

Meteorological summary for Chile, January, 1929 (by J. Bustos Navarrete, Observatorio del Salto, Santiago, Chile).—January, 1929, was characterized by unusually high temperatures in the central and southern zones especially between the 15th and 20th; maximum temperatures exceeded 86° between Santiago and Valdivia and at the close of the period 95° was recorded at San Fernando and 100° at Talca.

During the first half of the month atmospheric activity was practically at a standstill even in the south; no rain fell at Valdivia.

On the 18th a reaction set in with a depression crossing the extreme south and bringing scattered rains as far as Corral; then from the 24th to the 26th another depression influenced the weather in the southern zone with unsettled weather occurring between Valdivia and Chiloe.

On the 29th there suddenly appeared from the west, in about latitude 45° south, a marked cyclonic area (barometric minimum 29.13 inches) similar to those of midwinter; this depression affected a considerable area. The storm began in the south late on the 29th and extended to the remainder of the country on the 30th, bringing high north winds and abundant rainfall from Magallanes to Aconcagua. The unsettled weather abated on the 31st. The amounts of precipitation ranged from 0.80 to 1.20 inches in the central zone to 1.60 to 3.90 inches in the southern zone.

Anticyclonic centers were practically absent; the only ones meriting mention were charted on the 4th over Chiloe and on the 23d over the Juan Fernandez Islands.—*Translated by W. W. R.*

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SOLAR OBSERVATIONS

SOLAR RADIATION MEASUREMENTS MADE DURING FEBRUARY, 1929

By HERBERT H. KIMBALL

For references to descriptions of instruments and exposures, and an account of the method of obtaining and reducing the measurements, the reader is referred to this volume of the REVIEW, January, page 26.

Table 1 shows that solar radiation intensities averaged close to normal values for February at Washington and Madison and considerably below at Lincoln.

Table 2 shows an excess in the total radiation received on a horizontal surface at Washington, Madison, New York, and Chicago, and a deficiency at Lincoln.

Skylight polarization measurements obtained on two days at Washington give a mean of 63 per cent with a maximum of 64 per cent on the 4th. These are slightly higher than the corresponding averages for February at Washington. No measurements were obtained at Madison, as the ground was continuously covered with snow throughout the month.

TABLE 1.—*Solar radiation intensities during February, 1929*

[Gram-calories per minute per square centimeter of normal surface]

Washington, D. C.

Date	Sun's zenith distance: 8a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon
	75th mer. time	Air mass: A. M.					P. M.				Local mean solar time
	e.	5.0	4.0	3.0	2.0	[1] 1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Feb. 1	1.68		0.54	0.75	1.13		1.23	1.00	0.80		1.37
Feb. 4	1.88	0.70	0.86	1.06	1.29	1.56	1.26	1.01	0.87	0.73	1.96
Feb. 7	4.75	0.73	0.87	1.03							4.37
Feb. 11	1.88						1.03				1.68
Feb. 12	1.88		0.65	0.75	1.05		1.28	1.04	0.87	0.73	1.37
Feb. 18	4.57	0.64	0.83	0.96	1.26						4.75
Feb. 23	1.52		0.72	0.96	1.22						1.32
Means		0.69	0.74	0.92	1.19	(1.56)	1.20	1.02	0.85	(0.73)	
Departures		−0.02	−0.06	−0.05	+0.02		+0.01	+0.05	+0.01	−0.03	

TABLE 1.—*Solar radiation intensities during February, 1929*—Con.

Madison, Wis.

Date	Sun's zenith distance: 8a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon
	75th mer. time	Air mass: A. M.					P. M.				Local mean solar time
	e.	5.0	4.0	3.0	2.0	[1] 1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Feb. 1	0.48	1.02	1.12	1.27	1.40						0.86
Feb. 2	0.81			1.16							1.12
Feb. 9	0.58		1.08	1.23	1.43						0.86
Feb. 11	0.71		0.88	1.05				1.06			1.19
Feb. 15	1.68	0.92	1.04	1.15							2.87
Feb. 19	0.51						1.44				0.53
Feb. 20	0.28				1.35						0.71
Means		(0.97)	1.03	1.17	1.39		(1.44)	(1.06)			
Departures		+0.02	−0.07	−0.05	+0.02		+0.07	−0.12			

Lincoln, Nebr.

Feb. 9	0.38		1.10	1.27	1.43		1.43	0.91	0.65		0.66
Feb. 10	1.19		1.08	1.24	1.38						1.45
Feb. 11	0.86			0.82	1.32						1.24
Feb. 13	0.96							0.98			1.37
Feb. 15	2.26						1.50	1.19	1.05	0.93	2.36
Feb. 16	2.49				1.35						4.17
Feb. 19	0.71			0.99	1.25						0.86
Feb. 20	1.02	0.88	0.97	1.15	1.34						1.88
Feb. 22	1.12	0.91	1.05	1.17	1.31	1.61	1.39	1.11	1.03	0.83	2.36
Feb. 26	2.16							1.10	0.98	0.91	2.87
Feb. 27	2.16	0.61	0.77	0.94	1.27						3.00
Means		0.80	0.99	1.08	1.34		1.44	1.06	0.93	0.89	
Departures		−0.13	−0.05	−0.12	−0.04		+0.08	−0.11	−0.10	−0.03	

[1] Extrapolated.

TABLE 2.—*Total solar radiation (direct+diffuse) received on a horizontal surface*

[Gram-calories per square centimeter]

Week beginning	Average daily radiation: Washington	Madison	Lincoln	Chicago	New York	Fresno	Average daily departure from normal: Washington	Madison	Lincoln	Chicago	New York
1929	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
Jan. 29	279	224	135	124	211	213	+77	+31	−92	+39	+71
Feb. 5	176	251	258	134	145	329	−25	+42	−1	+10	+16
Feb. 12	272	219	277	150	188	361	+47	−10	−7	+11	+50
Feb. 19	323	265	283	165	212	402	+67	+12	−24	+9	+32
Excess or deficiency since first of year on Feb. 28							+945	+203	−1,876	+399	+1,036